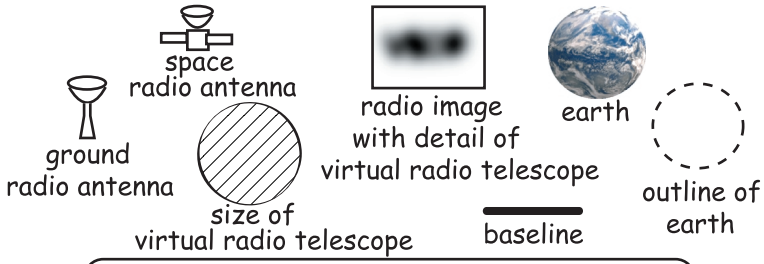
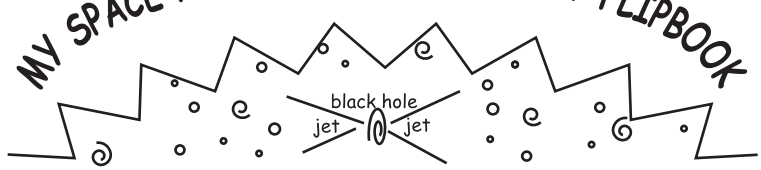


Why do space radio-interferometry?

To learn about radio-sources in the sky - like the jets near black holes - we first want to be able to see them in finer detail. The bigger our telescope, the more detail we see. As we combine data using interferometry from radio antennas that are farther and farther apart, our virtual telescope becomes bigger and bigger. Now, we use the radio antenna on the VSOP spacecraft with radio antennas on earth to make a HUGE virtual telescope - 3 times the size of the earth !!
So we are making much more detailed pictures that give us lots more information about what's going on near black holes !

VSOP = Very Long Baseline Interfermetry Space Observatory Programme

MY SPACE RADIO INTERFEROMETRY FLIPBOOK



SPACE VERY LONG BASELINE INTERFEROMETRY

http://us-space-vlbi.jpl.nasa.gov

A VIRTUAL TELESCOPE BIGGER THAN THE EARTH THAT'S ALREADY A REALITY !!

We look at radio sources in the sky - like the jets that shoot out of black holes - but look what you see when the imaginary source,  , in your flipbook gets more and more detailed as we create a bigger and bigger virtual telescope,  , by using radio antennas that are farther and farther apart !

Back Cover ↗

↖ Front Cover

How you too can flip over Space Very Long Baseline Interferometry

or

How to make your own space radio interferometry flipbook

What you need: scissors, stapler, and maybe a hammer

Directions

1. Cutting up: Cut out all the frames - 18 frames on 3 sheets. Also, cut out the front cover and back cover on the top of this sheet.

2 Bring to order: Put the frames in order like the pages of a book, starting with "frame 1" (on top), then "frame 2", continuing to "frame 18" (on the bottom).

3. (optional) For color lovers only: If you like, you can add color to each frame with crayons or markers. It will be best if the color for a particular part is the same on each frame. For instance, if you make the ground radio antenna on the left red in the first frame, it would be good to make it red in all the frames. You could make the ground radio antenna on the right, the one that moves across the earth, another color, like blue, but then it would be good to make that radio antenna blue in all the frames. You can add color to the front and back covers, too.

4. Go under cover: Add the front and back covers to your stack of frames: front cover on top, back cover on the bottom, and words facing outside for both.

5. Quality control: Check that all the frames are facing the same direction, all the frame numbers are in the same corner, and the frames are in the correct order (1 - 18).

6. The staple that binds: Holding the whole book in your hand, tap the right edge (the flipping edge) of the book on a table to align it.

6. (continued) There are 2 ways to finish your flipbook:

Option 1 (the simpler way):
Staple the upper left corner of the book. You're done!

Option 2 (the trickier way - but better for flipping)
Looking at the book like you're going to read it, hold it on the left side and bend back all the pages on right side just a little bit to make them a little staggered. Then, while still holding the right (staggered) side, let go of the left side. The pages of the book should still be slightly staggered. (It may take a few times to get the pages staggered just a little. If you decide to try again, be sure to tap the right edge of the book on the table again to line up the pages.) When the pages are ready, staple them as close to the upper left corner as you can and still staple all the pages. (Since the lower pages are now offset a little, the staple needs to be a little to the right.) If you don't staple all the pages the first time, you can add another staple or two in the same upper left corner area. Whew! You're done!

Note: A staple from a standard stapler should go though these pages. If the ends of the staple stick out, you might be able to hammer the ends flat.

7. Flip! Try holding the upper left corner of the book (the corner with the staple) with one hand and, with your other hand, flip (front to back) on the lower right corner. Experiment to see what works best for your flipbook. Happy flipping!

frame 1

frame 2

frame 3

frame 4

frame 5

frame 6

frame 7

frame 8

frame 9

frame 10

frame 11

frame 12

frame 13

frame 14

frame 15

frame 16

frame 17

frame 18